Lerista desertorum – a new skink species for Queensland with notes on other significant herpetofauna records from western Queensland

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Knowledge of basic information like taxonomy, distribution and habitat preference for much of Australia's amphibian and reptile fauna is still increasing. For example, regarding reptiles, Wilson and Swan 2008 state that "more than 20 species have been added to this revised edition, and many maps have been adjusted to accommodate range extensions" in the five years since the first edition (2003). Further descriptions have occurred since then (e.g. Hoskin and Higgie, 2008; Couper *et al*, 2008).

Cravens Peak Station was purchased by Bush Heritage Australia in 2006 with the aim of improving the conservation values of the property. Cravens Peak and neighbouring properties Carlo and Ethabuka have been extensively studied biologically, particularly by Prof. Chris Dickman, Dr Mike Letnic (University of Sydney) and colleagues (e.g. Dickman *et al*. 1999, Dickman *et al*. 2001, Letnic 2003, Letnic *et al*. 2004, Letnic and Dickman 2005, Daly *et al*. 2007). In 2007 the Royal Geographical Society of Queensland supported a multi-disciplinary Scientific Study of Cravens Peak with fauna surveying being one aspect of the study. During the course of this survey, we identified a number of significant reptile records for Queensland, including a new species previously unrecorded in the state. This note describes new distribution information for these species, provides field observations on feeding behaviour in one species and raises a taxonomic query that needs further investigation.

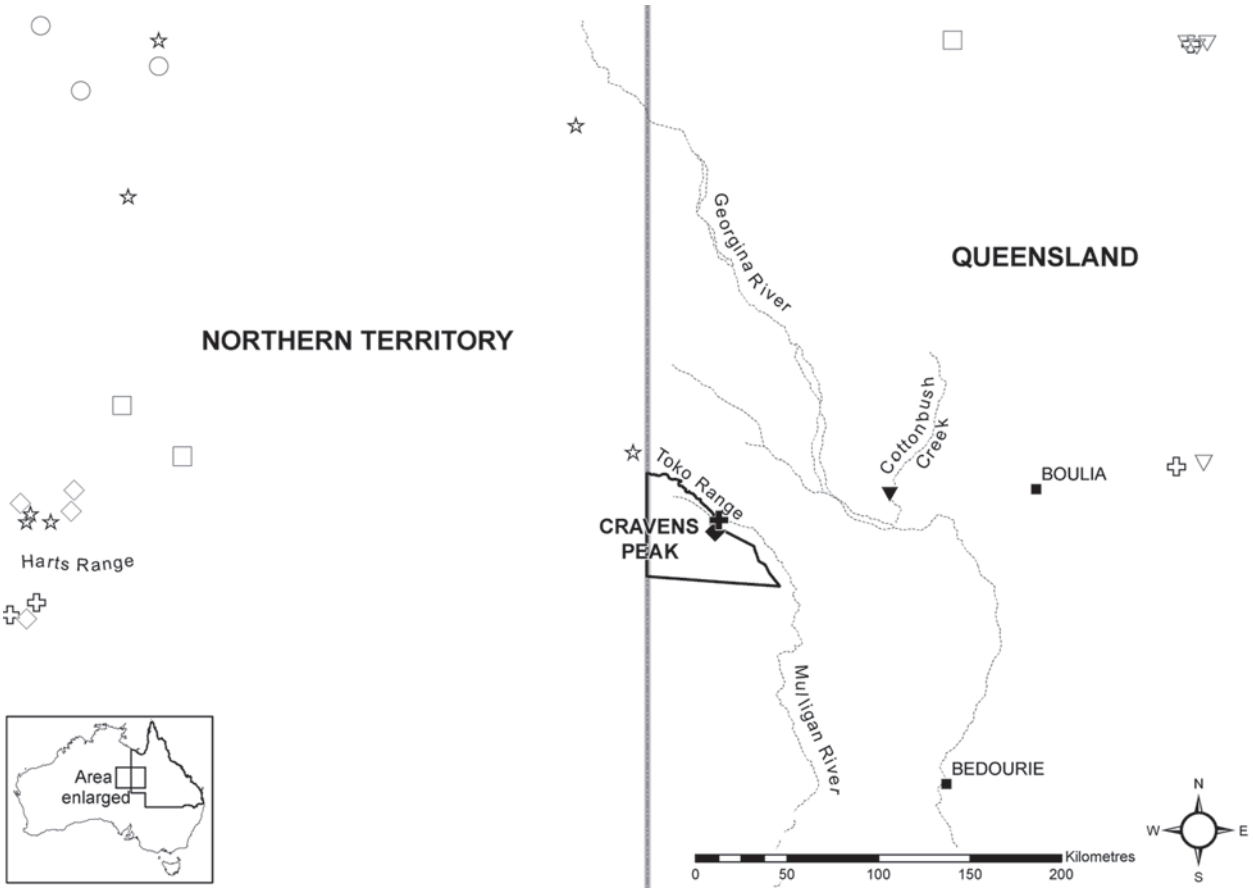

Figure 1. Map indicating location of records discussed in text, including previously known regional records (sourced from OZCAM 2009 and Dr Andrew Amey, pers.comm.). Symbols are *Lerista desertorum* (◆ J85444, ◇ previous records), Gehyra nana (✚ J85424, ✜ previous records), *Gehyra minuta* (○), *G. montium* (☆), *G. punctata* (□) and *Litoria electrica* (▼ J85385, ▽ previous records).

Study area and methods

Cravens Peak Reserve (23°15'S, 138°30'E, hereafter referred to as Cravens Peak) is situated approximately 135km south west of Boulia. The 233,000 ha reserve lies on the northern end of the Simpson Desert across the boundary of the Simpson-Strezlecki Dunefields and Channel Country bioregions. The property consists of two major land types; red sandy dune fields, sandy plains and clay pans of the Simpson Desert; and rocky gorges, escarpments, mesas and extensive gibber plains of the Toomba and Toko Ranges. Further information on Cravens Peak, its history, landscapes, management and general wildlife can be found at the Bush Heritage Australia website, www.bushheritage.org.au/our_reserves/state_queensland/reserves_cravens_peak.

Eighteen sites were sampled from 2-6 April 2007 using a standard quadrat that comprises a nested trap and search array. This array incorporates pitfall, funnel, Elliott and cage traps, and the survey included active searches and observations as part of the standardised effort. Further details on survey methods are described in Kutt *et al*. (2009). One of the records presented herein (*Litoria electrica*) was not collected during the Cravens Peak fauna survey, but was obtained during opportunistic searches in the Boulia – Cravens Peak region while attempting to gain access to the property after significant March rainfall.

A summary of the specimens collected and reported here is presented in Table 1.

Range extensions

Lerista desertorum Sternfeld 1919

A single *Lerista desertorum* was collected and lodged with the Queensland Museum (J85444; Figure 2) from open Acacia cyperophylla and A. aneura tall shrubland on a low stony plateau within Cravens Peak (23°7'12"S; 138°19'55"E, Figure 3). The plateau is part of the Toko Range. J85444 conforms to the original description of *Lerista desertorum* (as *Lygosoma planiventrale desertorum*) (Sternfeld 1919) and to accounts of L. desertorum presented in Storr (1971, 1991), Cogger (2000) and Wilson and Swan (2008). Specific morphological and pattern features of J85444 include large size (SVL 75 mm; tail length 78 mm), mid-body scales in 20 rows, moveable eyelids, 2 fingers, 3 toes, nasal scales moderately separated (rostral in narrow contact with frontonasal), prefrontals widely separated (frontonasal in broad contact with frontal), frontoparietals paired and narrowly separated and about the same width as the interparietal, two nuchal scales, no ventrolateral keel present, temporals 1 + 2 (i.e. one primary and two secondary temporals sensu Horner 2007), dorsal surface silver-brown with two paravertebral rows of dark brown squarish spots, each spot about 1/4 – 1/3 scale width, two additional broken rows of dark brown laterodorsal spots present, each spot 1/6 – 1/4 scale width, dark upper lateral stripe approximately 1.5 scales wide.

Figure 2. *Lerista desertorum* (J85444) collected from Toko Range, SW Qld.

Figure 3. *Lerista desertorum* collection locality. Cravens Peak, SW Qld.

Lerista desertorum is a widespread inhabitant of inland Acacia scrubs and Eucalyptus woodlands in WA, SA and the NT (e.g. Cogger 2000, Wilson and Swan 2008). The nearest records to this present record appear to be from the Harts Range area of the Northern Territory, over 320 km west of this record (South australian Museum herpetology collection R18502, Museum and Art Gallery of the Northern Territory herpetology collection R.1749, R.15270, R.18213; OZCAM 2009).

Feeding behaviour of Ctenotus calurus Storr 1969

Ctenotus calurus was captured or observed at eight locations within Cravens Peak. All except one location were spinifex (*Triodia basedowii*) and/or cane grass (*Zygochloa paradoxa*) dominated red sand dunes or swales. The exception was on a grazing affected red sand dune crest dominated by Tribulus sp. with no spinifex nearby. Voucher specimens were lodged with the Queensland Museum (J85423, 85437-8, 85441).

Ctenotus calurus is widely distributed in the sand dune deserts of central WA and the southern NT preferring spinifex dominated habitats (e.g. Cogger 2000, Wilson and Swan 2008). Its range extends into southwest Queensland in the sand dunes of the Simpson Desert and it has previously been recorded from Cravens Peak (Letnic *et al*. 2004).

Pianka (1969) reported unique feeding behaviour (among desert Ctenotus) in C. calurus, involving continual movement, lashing of the blue tail and occasional pauses to dig up insect larva. Further details of feeding behaviour are presented here. Ctenotus calurus was observed feeding on termites on one of our standardised sites commencing at 4:20 PM on 06/04/2007. The skink fed by apparently looking and listening intently at a point in the sand. It would move around with jerky movements and then suddenly plunge head first into the sand, penetrating the very thin (1 – 3 mm) surface crust (visible in Figure 4) and leaving everything behind the midbody exposed above the surface. Whilst so buried, it would scratch with hind, and possibly forelimbs, causing sand to collapse in around its body. This would dislodge termites from underneath the soil surface. It would then emerge, sometimes with a termite in its mouth, but often not. It would then quickly eat any termites exposed on the ground by its digging action. It would also dig with forelimbs in a circular motion (Figure 5) and hindlimbs, but with its head above ground after looking/listening at the sand surface. It would dislodge many termites in this way and rapidly consume them. All actions were frequently accompanied by twitching and shaking of the obvious blue tail (Figures 3 & 4).

Figure 4. Ctenotus calurus scratching for termites, Cravens Peak, SW Qld. Note numerous scratch marks on the ground, and caved in surface sand where the skink was catching termites underground.

Figure 5. Ctenotus calurus scratching for termites using circular motion of forelimbs. Note rapidly shaking tail.

James (1991) questioned how desert Ctenotus, which are rarely active at night, catch termites which are rarely active on the surface by day. He posited that Ctenotus may dig the termites from their shallow tunnels. Although James (1991) was not working with C. calurus in his study, it seems that he may have been correct, given the behavioural observations presented here.

Gehyra nana Storr 1978

A single *Gehyra nana* was collected from low rock escarpments at the "S-Bend" gorge on the Mulligan River, Toko Range (23°03'46"S; 138°21'06"E), and deposited at the Queensland Museum (J85424). This species was very common in this area, with 15 individuals being observed in 5 – 10 minutes of searching.

Gehyra nana is primarily a saxicoline species of ranges of the Top End of the NT, extending into Qld in the Northwest Highlands and Gulf Plains. There are also populations in rock-dominated habitats in the Einasleigh Uplands and Desert Uplands (see e.g. Cogger 2000, OZCAM 2009, Wilson 2005, EV unpubl. pers. obs.). However, the nearest specimen records of G. *nana* are from 233km east northeast of the record presented here (R.142957-58, Australian Museum herpetology collection; OZCAM 2009). There is an additional record from the 'Simpson Desert' (R51268) with no geo-reference information.

It is worth mentioning G. *montium*, a primarily a rock-dwelling species of ranges of central eastern WA and much of the southern half of the NT (e.g. Cogger 2000, OZCAM 2009, Wilson and Swan 2003). The species collected from Cravens Peak resembles both G. *nana* and G. *montium* (Figure 6). There is one record from the Toko Range area in the extreme east of the NT, almost on the Cravens Peak boundary (see Figure 1). The Toko Range continues into Qld and forms part of Cravens Peak, including the S-Bend gorge on the Mulligan River where the records presented here are from.

Gehyra montium is poorly differentiated from G. *nana*, e.g. Cogger (2000) differentiates the species on the basis of dorsal colouration (reddish- or orange-brown in G. *montium* vs pinkish-grey in G. *nana*). In Storr's original descriptions of these two species (Storr 1978, 1982), no morphological characters for separating them are provided; indeed in the descriptive paper of the

Figure 6. Gehyra nana, Toko Range, Cravens Peak, SW Qld.

junior species (*G. montium*, Storr 1982), *G. nana* is not mentioned. Moreover, Dr Paul Horner (Museum and Art Gallery of the Northern Territory, pers. comm.) suggested that both *G. montium* and *G. nana* are likely to prove composite species. The single specimen we collected from S-Bend gorge was identified as *G. nana* and photographs of another individual from the same location were identified as G. cf. nana by the Queensland Museum.

Details of J85424 include: male; snout-vent length 45 mm (no tail present); rostral scale width 1.75 mm, height 1.08 mm; five scales in contact with nasal, including the first upper labial; 2 small scales separating nasals; 15 preanal pores; 8 expanded lamellae under dilated portion of 4th toe.

Two other small, saxicoline, spotted, arid-zone Gehyra spp. that could be confused with *G. nana* or *G. montium* occur in the same very broad region of central Australia. These are G. minuta and *G. punctata* and brief discussion is warranted here. The *G. nana* collected (J85424) and observed did not have the very short, oblique snout of G. minuta. They also possessed a rostral scale slightly wider than high, with a flat upper surface (versus a distinctly gabled upper surface in G. minuta) and were larger than the largest reported in King 1982 (45.5 mm SVL). J85424 and others from Craven's Peak conform very closely to Storr's (1982) redescription for *G. punctata*, i.e. the "rostral is a little more than half as high as wide … top [of rostral] sloping downwards on each side … nostril surrounded by rostral, two supranasals [and] postanasal [and] first labial … first [upper labial] usually a little higher and considerably narrower than second … upper and lateral surfaces brown, heavily spotted with blackish brown … on back and tail arranged in transverse rows, a row of pale spots alternating with a row of dark spots". It differs from Storr's (1982) redescription in that the anterior chin shield is not contact with second lower labial and the pale upper and lateral spots of *G. punctata* are yellow, whereas in J85424 and others from Craven's Peak, the pale spots are cream. Craven's Peak animals also lacked two dark brown stripes on the side of the head, had a notch at the top of the rostral groove (rare in *G. punctata*), extending downwards about half the height of the rostral scale and lacked the swollen nostril region reported in Storr's diagnosis.

Max King, writing before the description of *G. montium* was published, states that *G. punctata* is not found in southern Qld (King 1981) and the range of *G. nana* in Qld is only in relatively small area in the north (approximately Georgetown to Croydon in the Gulf Plains).

In light of the taxonomic difficulties and probable multiple cryptic taxa involved, we conclude that additional collections from across central Australia, especially in rocky escarpment habitats will be necessary to clarify the taxonomy of the inland Gehyra sp. We further conclude that specimen based records of inland, saxicoline Gehyra identified to particular species should be regarded with caution. King (1981) summed up the situation well: "The problem … is that the initial descriptions were based on very few specimens from too few localities … [and] faded museum specimens have often lost subtle back pattern characteristics diagnostic of some of the forms."

Litoria electrica Ingram and Corben 1990

Litoria electrica is currently known from south of the Gulf of Carpentaria on the Gulf Plains, south-central Cape York on the Einasleigh Uplands/Gulf Plains boundary, Northwest Highlands and Mitchell Grass Downs bioregions (Ingram and Corben 1990, OZCAM 2009, Vanderduys *et al*, in prep), and inhabits a wide range of habitat types. On 31st April 2007, two individuals were heard calling on Cottonbush Creek (22°56'12"S; 139°11'28"E), a tributary of the Georgina River. One of these was collected and lodged with the Queensland Museum (J85385; Figure 7). These records are about 150 km west of the nearest previous records which are about 85 km east of Boulia (Dr Andrew Amey, Queensland Museum, pers. comm.). The records are 6 km from the Channel Country bioregion, suggesting L. electrica is likely to occur in that bioregion. The habitat was a recently inundated coolabah (Eucalyptus coolabah) lined creek channel.

Both individuals closely conformed to the description of L. electrica (Ingram and Corben 1990). Among other features, the description separates L. electrica from L. rubella on the basis of banded dorsal surface, which often includes "an indistinct chocolate mark across the upper back; a chocolate forward-pointing chevron across the lower back" (from description of the holotype). The call of L. electrica is also distinct, being higher pitched than that of L. rubella. The authors have had previous experience with both L. electrica and L. rubella and immediately recognised its distinctive call in the field prior to collecting J85385.

Figure 7. *Litoria electrica* (J85385) male, Cottonbush Creek, west of Boulia, SW Qld.

Conclusion

The records reported here provide important new information for the reptile fauna for Queensland, which are now permanently housed in the Queensland Museum collections database. These records also highlight a common dilemma where observational data can remain hidden from the public arena, unless reported or collected for museum databases. The collection and register of fauna specimens act as an important resource for understanding the distribution of species, providing data for government policy and legislative objectives (e.g.

threatened species management or biodiversity planning) and as vouchers for further taxonomic work. Long term ecological monitoring is extremely valuable in identifying genuine trend and patterns in vertebrate fauna species, especially in low productivity environments (Dickman *et al*. 1999). However accurate presence and absence data is a significant data source, and is often used, if somewhat unsatisfactorily, as a surrogate for assessing regional biodiversity pattern and trend (Sattler and Creighton 2002).

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